**3GPP TSG-SA3 Meeting #81-LI-e-a *s3i210267***

**Online, , 12 Apr 2021 - 16 Apr 2021**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **33.127** | **CR** | **0125** | **rev** | **0** | **Current version:** | **17.0.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | LALS Updates 127 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | SA3-LI (OTD) | | | | | | | | | |
| ***Source to TSG:*** | SA3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LI17 | | | | |  | ***Date:*** | | | 2021-04-12 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Clarification is required regarding how LALS works in a 5G context. Currently 33.127 is pointing to 23.271 which is not meant for 5G. 23.273 should be referenced for 5G. In addition, the aspects of the LI-LCS client provisioning and operation are clarified as well as the provisioning and operation of the LCS Server/GMLC are clarified. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | References to 23.273 are included, requirements for privacy override are properly referenced, whether to allow signaling to other networks for LALS is included and a requirement for the GMLC to determine the AMF/MME of any served user without having to go to an external network is added, as well as other clarifications. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | CSPs may not be able to meet regulatory requirements regarding protecting  the privacy of LI. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2, 7.3.3.1, 7.3.3.2.1, 7.3.3.2.2, 7.3.3.2.3, 7.3.3.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\*\*\* Start of First Change \*\*\*

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.501: "System Architecture for the 5G System".

[3] 3GPP TS 33.126: "Lawful interception requirements".

[4] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[5] 3GPP TS 23.271: "Functional stage 2 description of Location Services (LCS)".

[6] OMA-TS-MLP-V3\_5-20181211-C: "Open Mobile Alliance; Mobile Location Protocol, Candidate Version 3.5", <https://www.openmobilealliance.org/release/MLS/V1_4-20181211-C/OMA-TS-MLP-V3_5-20181211-C.pdf>".

[7] ETSI TS 103 120: "Lawful Interception (LI); Interface for warrant information".

[8] ETSI TS 103 221-1: "Lawful Interception (LI); Internal Network Interfaces; Part 1: X1 ".

[9] 3GPP TS 33.501: "Security Architecture and Procedures for the 5G System".

[10] ETSI GR NFV-SEC 011: "Network Functions Virtualisation (NFV); Security; Report on NFV LI Architecture".

[11] 3GPP TS 33.107: "3G Security; Lawful interception architecture and functions".

[12] 3GPP TS 23.214: "Architecture enhancements for control and user plane separation of EPC nodes; Stage 2".

[13] 3GPP TS 23.228: "IP Multimedia Subsystem (IMS); Stage 2".

[14] 3GPP TS 38.413: "NG-RAN; NG Application Protocol (NGAP)".

[15] 3GPP TS 33.128: "Protocol and Procedures for Lawful Interception; Stage 3".

[16] ETSI TS 103 221-2: " Lawful Interception (LI); Internal Network Interfaces; Part 2: X2/X3".

[17] MMS Architecture OMA-AD-MMS-V1\_3-20110913-A.

[18] Multimedia Messaging Service Encapsulation Protocol OMA-TS-MMS\_ENC-V1\_3-20110913-A.

[19] 3GPP TS 22.140: "Multimedia Messaging Service (MMS); Stage 1".

[20] ETSI GS NFV-IFA 026: "Network Functions Virtualisation (NFV) Release 3; Management and Orchestration; Architecture enhancement for Security Management Specification".

[21] 3GPP TS 33.108: "Handover Interface for Lawful Interception (LI)".

[22] 3GPP TS 23.401: "General Packet Radio Service (GPRS) enhancements for   
Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access".

[23] 3GPP TS 23.402: "Architecture enhancements for non-3GPP accesses".

[24] 3GPP TS 23.280: "Common functional architecture to support mission critical services; Stage 2".

[25] OMA-AD-PoC-V2\_1-20110802-A: "Push to talk over Cellular (PoC) Architecture".

[26] GSMA IR.92: "IMS Profile for Voice and SMS".

[27] GSMA NG.114: "IMS Profile for Voice, Video and Messaging over 5GS".

[28] 3GPP TS 24.147: "Conferencing using the IP Multimedia (IM) Core Network (CN) subsystem; Stage 3".

[29] ETSI GS NFV-SEC 012: "Network Functions Virtualisation (NFV) Release 3; Security; System architecture specification for execution of sensitive NFV components".

[30] 3GPP TS 23.273: "5G System (5GS) Location Services (LCS); Stage 2".

\*\*\* End of First Change \*\*\*

\*\*\* Start of Second Change \*\*\*

7.3.3 Lawful Access Location Services (LALS)

7.3.3.1 General

LALS provides lawful access to the target's location. LALS is based on the Location Services (LCS) capabilities defined in the TS 23.273 [30] and in the OMA MLP specification [6]. The 5G Core Network support of LCS is described in clause 4.4.4 of TS 23.501 [2] and clause 4.13.5 of TS 23.502 [4].

LALS shall adhere to the requirements in clauses 6.6 (Security) and 6.3 (Detect and Capture) of TS 33.126 [3]. The LCS supporting LALS shall be able to provide priority to LALS requests. The subscriber location privacy settings (see clause 5.4.4 of TS 23.273 [30]) shall be overridden for LALS.

For inbound roaming targets, the VPLMN LCS functional entities fulfilling LALS requests should not communicate with the target's HPLMN, as it may cause detectability issues. Detectability issues may also exist when LALS is invoked for outbound roaming targets.

Depending on national requirements and LCS capabilities of the CSP, the location information provided by LALS may vary in location information types (mobile network cell ID, location shape and geo-coordinates, civic address, or a combination of those), in the set of additional location parameters (map data, motion state, speed, etc.), as well as in the accuracy of provided location information.

NOTE: The accuracy of positioning is, usually, a trade-off for the location acquisition delay. It also depends on other positioning technology specific factors.

The parameters controlling the LALS output are either delivered per warrant over the LI\_X1 interface from the ADMF to the LI-LCS Client, or to the Location Triggering Function (LTF, see Clause 7.3.3.3), or are pre-configured in the LI-LCS Client. The LI-LCS Client is an IRI-POI in the CSP network fulfilling the role of the LCS client for LALS purposes. As such, the LI-LCS client shall support all the requirements and interfaces in accordance with 3GPP TS 23.273 [30] for an LCS client with the following additional requirements and clarifications. The LIPF or other LI entity shall provision the LI-LCS client with the address(es) of the LCS Server/GMLC with which the LI-LCS client is to interact. In addition, the LIPF or other LI entity shall provision the LCS Server/GMLC with information regarding the LI-LCS client including the privacy override indicator. The LI-LCS client shall indicate to the LCS Server/GMLC whether the contacting an external network is allowed for this user.

When an LCS Server/GMLC receives a registration request from the LI-LCS client, the LCS Server/GMLC shall take note of this LCS client as being an LI-LCS client and whether contacting an external network is allowed for the target. Based on this knowledge and receipt of a request to not allow any external network interaction for the target, the LCS Server/GMLC, shall ensure that it does not signal any indication of LI if it communicates to external networks.

There are two types of the location interception defined in the present document: target positioning and triggered location.

Target positioning determines the target's location independently of the services used by the target.

Triggered location determines the LALS based location of the target when specific network or service events related to the target occur. For triggered location, the LCS Server/GMLC shall identify the AMF/MME in the same network currently serving the target (including for inbound roaming targets without any interaction with the inbound roaming target’s home network for LCS).

The warrant for target positioning and for triggered location of the same target may be independent of each other and may be overlapping in time or combined in a single intercept warrant by the LEA.

There may be multiple active LALS warrants from different LEAs at any given time.

\*\*\* End of First Change \*\*\*

\*\*\* Start of Second Change \*\*\*

7.3.3.2.1 General

As required by the R6.3 – 370 of TS 33.126 [3], the location provision variants supported in the current document are immediate location and periodic location. The triggered location reporting utilizes the immediate location variant.

The LI-LCS client shall include an IRI-POI that has the LI capabilities to generate the target UE’s location related xIRI.

Figure 7.3-1 shows the architecture for LALS where the LI-LCS client provides the target's location and associated information towards the MDF2 over the LI\_X2 interface as per the ADMF request for target positioning delivered over LI\_X1 interface.

****

**Figure 7.3-1: LALS model for target positioning**

NOTE: The Le interface is specified in the OMA MLP specification [6].

\*\*\* End of Second Change \*\*\*

\*\*\* Start of Third Change \*\*\*

7.3.3.2.2 Immediate location provision

The request for immediate location provision is delivered to the LI-LCS client over the LI\_X1 interface. Upon receiving the request, the LI-LCS client initiates a Location Immediate Request (LIR, see TS 23.271 [5]) to the LCS Server/GMLC supporting LALS over the Le interface and reports the acquired location to the MDF2 over LI\_X2.

While waiting for a response to an LIR from the LCS Server/GMLC, the LI-LCS client may receive and process additional location requests from the ADMF over the LI\_X1 and generate additional LIRs over the Le interface.

NOTE: The LCS Server/GMLC supporting LALS can be optimized to provide the same single location estimation in response to multiple positioning requests arriving in temporal proximity of each other.

The resulting immediate location information shall be delivered by the LI-LCS client as xIRI over LI\_X2 to the MDF2. The MDF2 generates and delivers the IRI messages based on received xIRI to the LEMF over LI\_H2.

\*\*\* End of Third Change \*\*\*

\*\*\* Start of Fourth Change \*\*\*

7.3.3.2.3 Periodic location provision

The request for periodic location provision is delivered to the LI-LCS client over the LI\_X1 interface.

The request for periodic location from the ADMF to the LI-LCS client may include a set of parameters defining the duration of reporting, report periodicity, etc. The description of the service response parameters is provided in clause 7.3.3.4. The periodic location result shall be delivered by the LI-LCS client as xIRI over LI\_X2 to the MDF2. The MDF2 generates and delivers the IRI messages based on received xIRI to the LEMF over LI\_H2.

The periodicity of the LALS reports shall be controlled by the LI-LCS client. The LI-LCS client shall issue a series of Location Immediate Requests (LIR, see TS 23.271 [5]) at required time intervals.

\*\*\* End of Fourth Change \*\*\*

\*\*\* Start of Fifth Change \*\*\*

7.3.3.3 Triggered location

The Triggered location is the capability of providing LALS based location information when specific network or service events related to the target occur. While IRI generated by the event that also triggers the LALS may have the location information included (in the form of cell ID), LALS may provide additional location parameters, such as the target geo-location, velocity, etc. (see R6.3 – 270 of TS 33.126 [3]).

The LALS triggered location architecture in Figures 7.3-2 and 7.3-3 depicts the Location Triggering Functin (LTF). The LTF is an IRI-TF and resides in the same NF (e.g. AMF) that has the IRI-POI or in an MDF2. The LTF is responsible for triggering the IRI-POI in the LI-LCS Client when a specific event related to the target is observed at the co-located IRI-POI or received at the MDF2 in which the LTF is residing.

Figure 7.3-2 depicts the architecture of Triggered Location for IRI acquisition and delivery for the case when the LTF is residing in the same NF that has the IRI-POI reporting IRI events for the target.

****

**Figure 7.3-2: LALS model for triggered location (POI/LTF option)**

NOTE 1: The IRI-POI and LTF (IRI-TF) represented in figure 7.3-2 are logical functions and require correlation information be shared between them; they may be handled by the same process within the NF.

Figure 7.3-3 depicts the architecture of triggered location acquisition and delivery for the case when the LTF is embedded into an MDF2.

****

**Figure 7.3-3: LALS Model for triggered location (MDF/LTF option)**

The request for triggered location is delivered from the ADMF to either an IRI-POI with a co-located LTF or to a MDF2 containing an LTF over LI\_X1 interface along with other parameters of IRI intercept authorization/activation. As part of this request, the ADMF provides the address for the LTF to reach the LI-LCS client for use on the LI\_T2 interface.The IRI-POI (s) or the MDF2 then arm the LTF(s).

The LTF triggers the LI-LCS client over the LI\_T2 interface.

The LALS result is delivered to MDF2 from the LI-LCS Client as xIRI over the LI\_X2 interface asynchronously with the associated IRI events delivered by the IRI-POI. To enable correlation between the LALS reports and the associated IRI events, the LTF shall include the correlation information of the IRI event, if provided by the IRI-POI, into the LI\_T2 trigger.

NOTE 2: The IRI events may contain the location information obtained by other means, e.g. NPLI. The LALS reports are augmenting that information with extra details and accuracy.

\*\*\* End of All Changes \*\*\*